

Creating Sticky Software

A Brief Overview of “Stickiness” Factors in Learning Magic’s “The Wonders and Magic Of Nature” Software

By Byron Wilkes

When I sat down and began to organize my thoughts regarding this article and its contents, I found that it was interesting to reflect back upon the term “stickiness” (albeit with different meanings and connotations) and how the term and its derivatives had been engrained in me since early childhood.

So let me beg your indulgence as I digress for a second or two as I believe it might be helpful in setting some initial background for the meat of this article which is on the idea of “stickiness” and how it relates to the software we are endeavoring to create at Learning Magic, Inc.

Probably unrelated in some ways, but as a young child in the 1950s I can remember my mother saying, “Be sure to eat everything on your plate. It’s good for you and besides it will ‘stick’ to your ribs.” In some odd way, I guess my mother was trying to teach me the basics of nourishment. But being an inquisitive child, I can remember wondering what made the food “stick” and what do you do if you want to get it un-stuck? I can’t ever remember my mother explaining that process to me. As a result the concept of “stickiness” was definitely a bit of a mystery for me as a child.

Then the 1960s (i.e. in my informative years) my parents and other mentors/coaches drilled me on the importance of “stick-to-it-ness.” They explained that this trait should not only apply to my athletic endeavors, but instead to all areas of my life. They stressed that persistence in completing the job at hand, while improving one’s knowledge and skills would lay a solid basis for life’s journey. Certainly solid advice on that front!

So I surmise that those two sticky elements were with me when I entered the early 1970s. Then in 1973 as a young adult, I was given a very special gift; a daughter with special needs. Faced with that reality and knowing very little about developmen-



tal delays or cognitive disabilities, I began to talk to every expert and knowledgeable practitioner I could find. As I look back, even though I could not articulate it, I was essentially trying to find ways to get things to “stick” within my daughter’s brain. Reading incessantly anything and everything that was available in the mid 70s and early 80s on childhood learning and development was not that overwhelming. Much of what we know today due to research and medical advances were simply not available then. But those initial explorations were invaluable as they led me in many different directions over the next fifteen years. The knowledge that I gained during and through the mid 1990’s helped lay some of the foundations for the work that we do on a daily basis at Learning Magic. Of course working with and talking to industry experts like Linda Burkhart, Dr. Caroline Musselwhite, Dr. Karen Erickson etc. and working with hundreds of educators has also expanded both our research based and practical day to day knowledge.

So without further digression, let me use this background information as a basis for talking about five of the “sticky” factors or elements that we look at and try to incorporate into Learning Magic’s software products. I have chosen to use one of our most recent product releases “The Wonders and Magic of Nature” which we developed in Crick Software’s Clicker 5 to provide examples of some of these “sticky” elements.

Please keep in mind that much of what will be discussed in this article is not rocket science or new revelations. These elements are also not panaceas or cure-alls for all woes. Instead many of the elements that will be outlined have been documented for lengthy periods of time, but unfortunately not always incorporated consistently in educational products.

Three “Sticky Factors” from Jim Henson and Sesame Street

In the late 1960s and early 1970s a group of talented people were working together under the name of “Children’s Television Workshop” (CTW). Headed up by Joan Ganz Cooney, Gerald Lesser and Edward Palmer, CTW became a recognized leader in the education of young and disadvantaged children through the creation of Sesame Street.

Despite Sesame Street’s later huge success, CTW almost failed to get the program on the air initially due to inherent problems in the way they were attempting to deliver educational materials. The content they were trying to deliver just was not “sticking” with kids.

It was not until they shifted to an intermingling of Jim Henson’s Muppets and the human actors on Sesame Street that the “stickiness” of their educational materials began to resonate and “stick” with children. Certainly over time they made other changes to their programming as they learned more, but it was this fundamental change that led to their initial successes. But what was it about that change that effected the “stickiness” factor to such a large degree?

In my search for information I had the great privilege in the mid 1980s to listen to Jim Henson talk about he and his colleagues’ experiences in trying to both create and measure the effectiveness of their programming. It was in fact Jim Henson who I first heard use the term “stickiness” in regards to educational materials and the idea of content “sticking” in kid’s minds.

One of the key elements that Mr. Henson referred to during his talk was the powerful use of narrative-based stories as they made the switch in their program delivery. This fundamental change made the child an active participant in the story

(i.e., the child was going along and helping Grover or Big Bird do something on the street rather than having adults simply talk about the problem and what they were going to do).

By the use of narratives, the child was drawn into the story and was no longer just a passive listener/watcher, which television often relegated kids to in the early days. This simple technique of engaging the child via inviting them along greatly enhanced the child’s interest and the “stickiness” of the subject matter. Mr. Henson also mentioned that he had found this basic element carried forward to older children when he later worked outside of the Sesame Street environment.

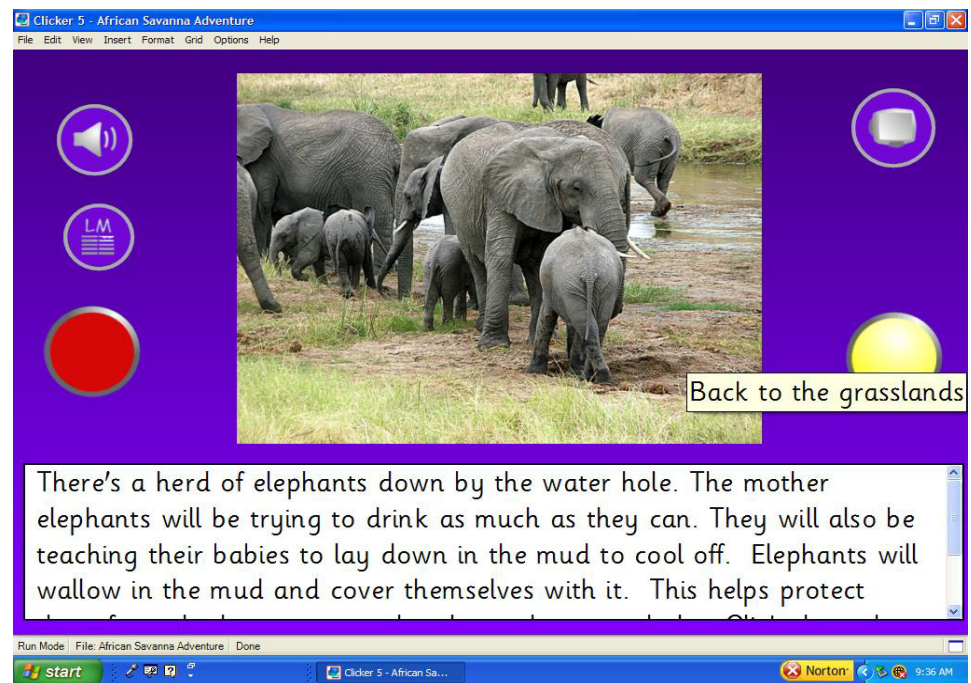
In “The Wonders and Magic of Nature” (Wonders) collection we have used the same technique in many of the reading and writing books. Guides or people living or working in the environments (i.e., actual NOAA researchers using submersibles to provide deep water photos and videos) invite and take the students through the environments. The guides/activities also ask students to take notes of what they are seeing and experiencing so that they can later document their findings in their own unique journals, logs, and reports.

In the Wonders collection we also provide students with the opportunity to choose their own paths through non-linear exploratory adventures. The screen print on page 18 from the African Savanna Adventure book shows elephants getting water and walking in the muddy waterhole in Botswana. The yellow button, if clicked, will take the students back to the grasslands, whereas the red button will allow the children to stay there for awhile and see other images of the elephants wallowing in the waterhole. The choice of which direction to go in the adventure is totally up to the student. In fifteen pages there are eight different paths through the environment which the students are asked to explore.

We have found that this active participation of making their own decisions regarding the direction they will go, plus off-computer note taking and the subsequent chronicling of their findings greatly enhances the chances of the content “sticking” with the student.

A second key element that Mr. Henson pointed out was the elimination of distracters. In the Sesame Street world, the cookie monster was found

A screen print from African Savanna Adventure Book illustrates the buttons available to students to navigate the non-linear exploratory adventure.

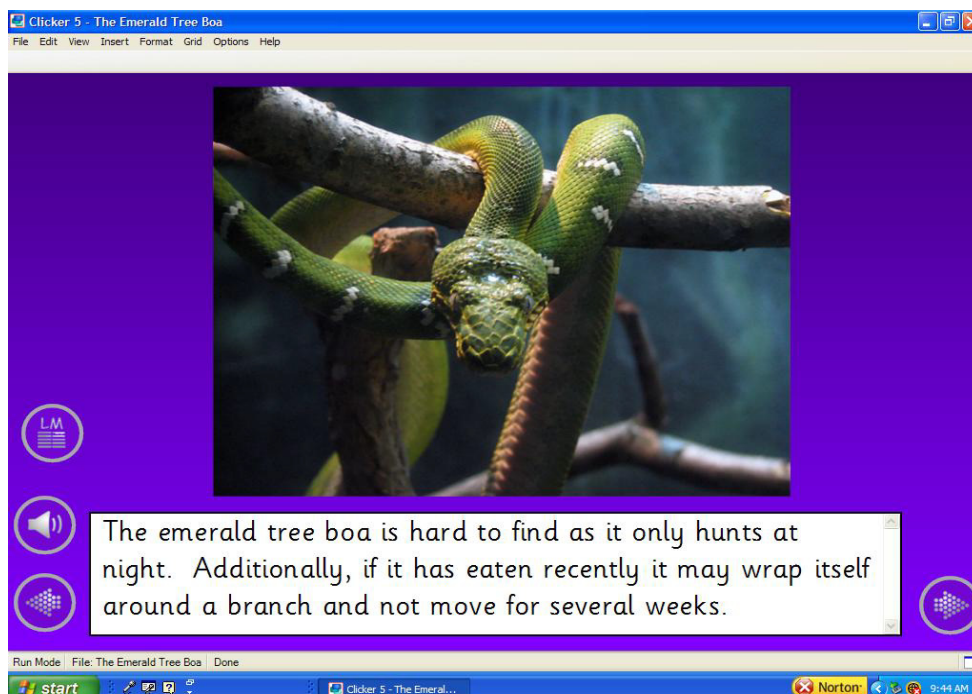


to be a great distracter if he was too active in a segment. The children wouldn't focus on the subject matter at hand, but instead would focus on the antics of the cookie monster.

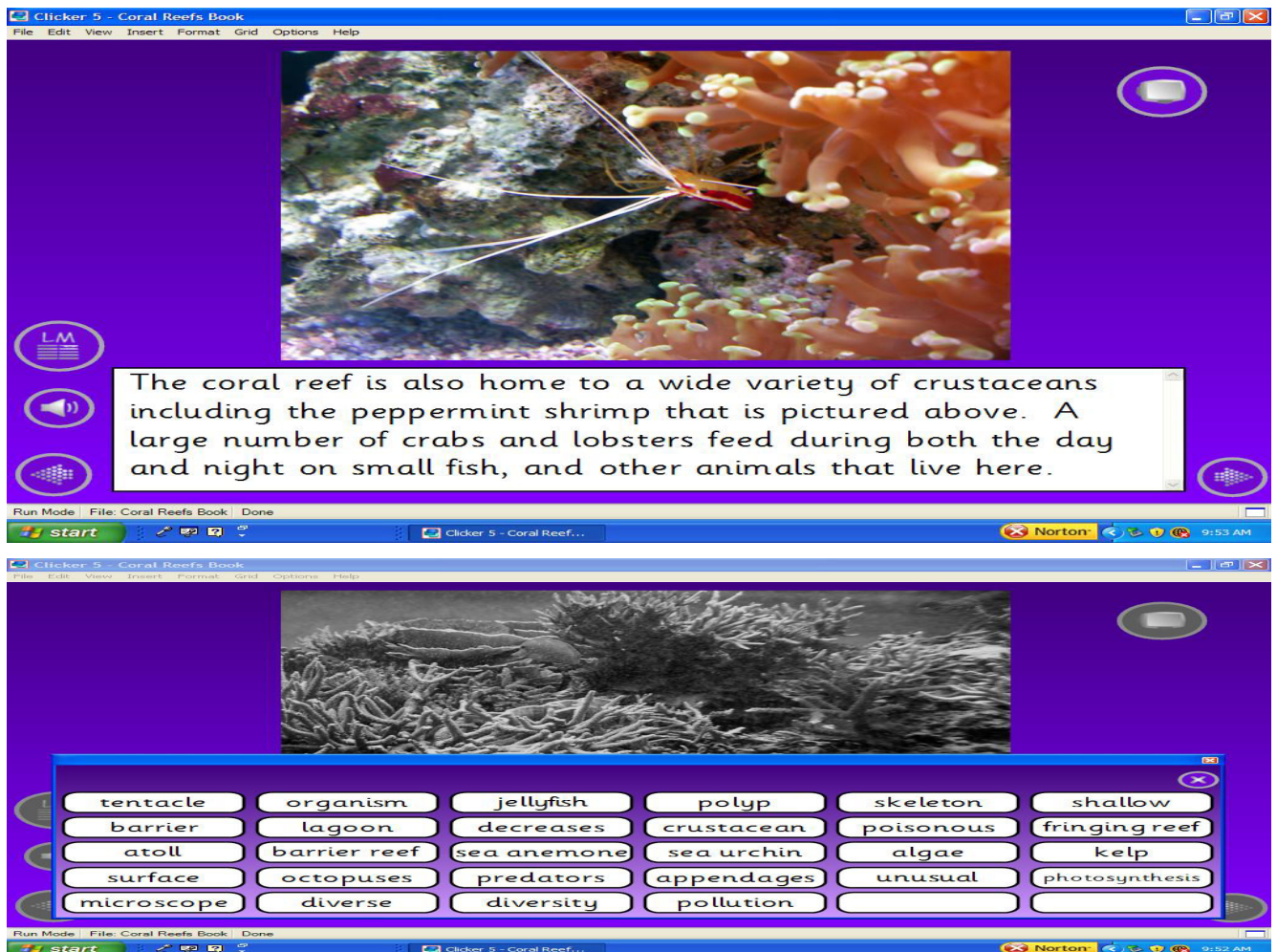
In Wonders we utilize literally hundreds of close up photographs and short videos that were taken in the wild to vividly bring home each of the Earth's ecosystems to the student. In so doing we consciously looked at the multi-media materials

we used to make sure that they are focused on the subject we are trying to teach and that there are no significant distracters present which might pull the focus of the child away from the main content. The screen print below will provide you with a sense of the focus on the image (i.e. the green tree boa in the Tropical Rainforest unit) that is being studied without the presence of distractors.

The last key element that resonated with me



Multimedia was selected to focus exclusively on the subject (e.g., green tree boa snake) to prevent the inclusion of distractors.



The top image shows the standard Clicker 5 bullhorn, which can be clicked if the student wants the text read aloud. The bottom image shows the pop-up vocabulary that is built into the book.

from Mr. Henson's talk was the later focus by CTW on providing multiple exposures to or pronunciations of a word within a lesson so that children had multiple opportunities to hear or see a word spelled or used in context. Today, industry experts like Dr. Caroline Musselwhite would call this element: providing children with an "ear print" of the word.

One of the limiting factors with the early Sesame Street programming was the fact that the individual segments were only three or four minutes long. These short segments curtailed some of the repetitive opportunities that children received in later programming by CTW and other educational programs.

Given that this repetition was a key element to "stickiness" in Mr. Henson's mind, we wanted to make sure in Wonders, that we took full advantage

of many of the marvelous capabilities of Clicker 5 to enhance the potential "stickiness" of the content and vocabulary. As a result, in Wonders students can independently read the text if they want. Or they can click on a bullhorn to hear as much text as they want read aloud. Or they can click on an individual word to hear the word pronounced. Furthermore, if they are not sure of the meaning of a word they can also click on a special vocabulary button and see a related pop-up menu whereby they can hear the definition of the word as it was used in context.

The two screen prints above show pages from a book within the Coral Reef Unit. The first image shows the standard Clicker 5 bullhorn, which can be clicked if the student wants the text read aloud. The second image shows the pop-up vocabulary that is built into the book. By clicking on a word in the pop-up, a definition of that word will be

read aloud. The student can also click on the word as many times as they need to hear the definition again.

These various levels of support were consciously built in and are being utilized effectively by students today to improve the overall “stickiness” of the content and associated vocabulary.

Repetition With Variation

Over the past decade as the power and affordability of computers, cameras and other electronic equipment has materialized, a number of industry experts inclusive of Pat Mirenda, Susan Norwell, Linda Burkhart, Dr. Caroline Musselwhite and many others have documented that the use of repetitive images (i.e. photographs, videos and other multi-media components) with slight variations leads to increased comprehension and generalization of materials.

Anecdotally we have heard from educators and witnessed the same results in our own work. If you were to look at the Grizzly Bear Country book from the Taiga Forest unit within Wonders you would find nineteen photographs and five short movies of grizzlies in their native habitat. As the Grizzly Bear Country narrative story progresses, students are taken up a river to see where the bears are fishing for salmon. Two videos initially show the bears entering the water, another video shows the salmon swimming underneath the water, and then at the top of the river a series of seven photographs within the narrative shows a mother and cub catching fish in the river. Each of the seven photographs is similar in that it shows the bears catching fish, but yet each is different. Three of the images are shown to the right to illustrate the repetitiveness of the scene but with different variations.

In working in classrooms we have found that students gravitate to these types of repetitive imagery (i.e. photographs and short videos). Secondly, due to their interest in the subject matter and its slight variations, students not only are able to retain content at a higher level, but they are also able to generalize and apply their new knowledge and understanding to other areas of their lives.



Three examples of the video sequence illustrating how grizzly bears fish for salmon. Students appreciate the slight variations and are able to retain content at a higher level.

Leveling

The last element that I would like to discuss is the idea of providing varying levels of information to different students. By levels I am referring to the ability to provide material in small digestible chunks so that students at different learning levels can be both exposed to and receive benefit from the content provided in a single activity.

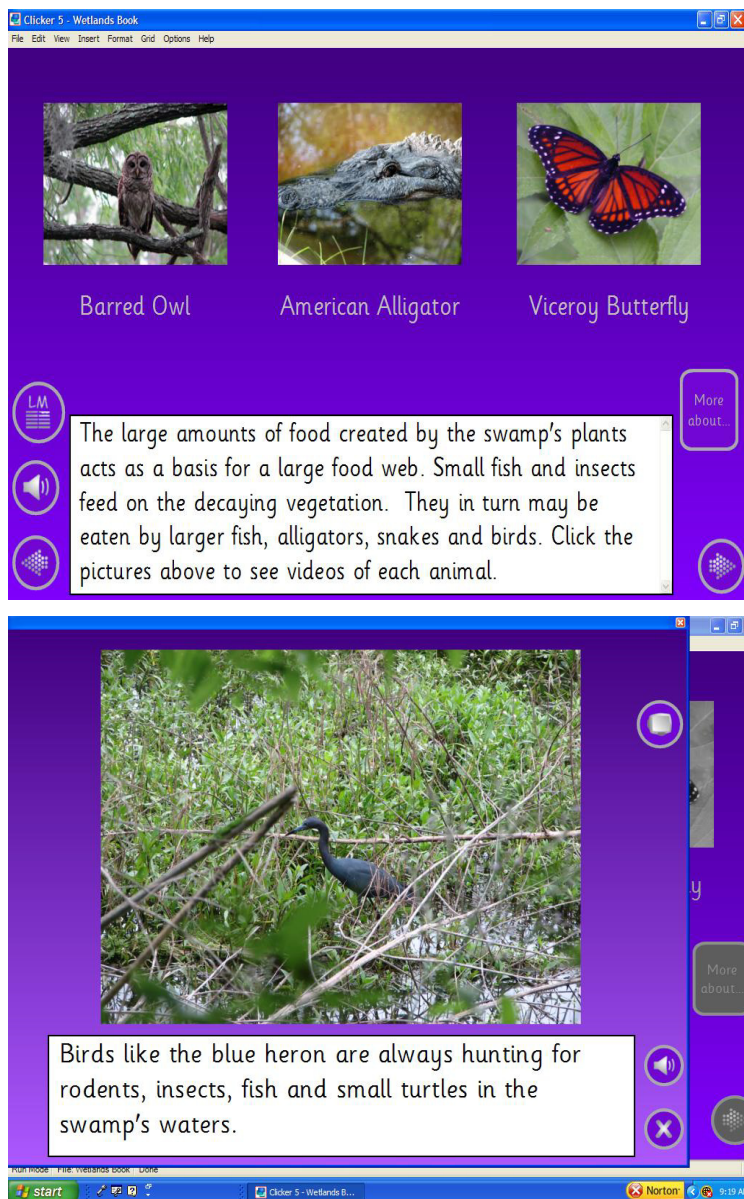
One of the wonderful features of Clicker 5 is the ability to pop-up information from different buttons (e.g., picture, video, vocabulary, or more about) on a page if wanted. By using these capabilities in Wonders we were able to provide multiple levels of content to students within the same activity.

As an example, in the screen prints to the right you will first see a page from the Wetlands book which provides a textbox at the bottom along with three pictures at the top. If a student clicks on any of the three pictures, a movie of that animal in a wetland environment will play in the same space. Additionally the More About button in the lower right of the screen, if clicked will display the pop-up showed below. In this pop-up additional textual content and another image is displayed. If the student wants to learn more they can click on the television button on top right of the pop-up, and a video of a small blue heron hunting for prey will be played.

In this way, we are able to deliver large amounts of standards based content about Earth and Life Science in small digestible chunks. This provides for an environment which allows children at different reading, writing and learning levels to participate side by side in the same classroom using the same materials. At each level we are hopeful that the content will “stick” with the student using the techniques we have described and in turn they will become eager to learn more.

In summary, from our experiences in the classroom and our work with industry experts, we have found that the more elements of “stickiness” that we can incorporate into the content and design of our products, the better it is for the student and their potential success. The five elements outlined in this article are some of the key “sticky” factors we look at in our software development. Again this is not rocket science, but we hope that some of the ideas outlined here, will help you in your own

activity design and development and it will also be beneficial to you in the area of software review.



Pages from the Wetlands book illustrate how students are able to access multiple levels of information.

About the Author

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